

What is claimed is:

1. In an IP-based Code Division Multiple Access (CDMA) cellular telecommunications network, a method for handing-off a dormant Mobile Node (MN) to a target packet zone having a Packet Data Service Node (PDSN) and a Base Station Controller with a Packet Control Function (BSC/PCF), the method comprising the steps of:

transmitting from the dormant MN to the BSC/PCF an origination request message comprising an indication that the MN is dormant;

responsive to a receipt of the origination request, sending from the BSC/PCF to the PDSN a registration request message, the registration request comprising an indication of an identity of the MN and an indication that the MN is dormant;

transmitting from the PDSN to the BSC/PCF a registration reply for requesting an establishment of a traffic channel between the BSC/PCF and the MN, the registration reply comprising an indication that the PDSN has packet data ready to be sent to the MN;

responsive to a receipt of the registration reply by the BSC/PCF, establishing a traffic channel between the BSC/PCF and the MN.

2. The method claimed in claim 2, wherein the step of establishing a traffic channel between the BSC/PCF and the MN is performed responsive to a detection of the indication that the PDSN has packet data ready to be sent to the MN.

3. The method claimed in claim 2, wherein the indication that the PDSN has packet data ready to be sent to the MN is one of a Data Ready to Sent (DRS) parameter set to a value of 1, and a Data Available Indicator.

4. The method claimed in claim 1 further comprising the step of:
establishing a Point-to-Point Protocol (PPP) connection between
the PDSN and the MN.

5. The method claimed in claim 1, further comprising after the step of
sending from the BSC/PCF to the PDSN a registration request message, and
prior to the step of transmitting from the PDSN to the BSC/PCF a registration
reply, the step of:

5 upon receipt of the registration request message, detecting that
there is no Point-to-Point (PPP) connection set up between the PDSN and the
MN.

6. The method claimed in claim 1, further comprising following the
establishment of the traffic channel, the step of reporting to a Mobile Switching
Center (MSC) the establishment of the traffic channel.

7. The method claimed in claim 1 further comprising, following the
receipt of the Registration message by the PDSN, the step of:

sending Link Control Protocol (LCP) data packets from the PDSN
to the BSC/PCF for the negotiation of a PPP connection.

8. The method claimed in claim 7 further comprising following the step
of sending the LCP data packets, the step of:

sending the LCP data packets from the BSC/PCF to the MN.

9. The method claimed in claim 1, wherein:

the origination request message comprises an indication that the MN is dormant and an indication of an identity of the MN;

the registration request message is an A-11 registration request message and comprises the indication that the MN is dormant and the indication of the identity of the MN; and

the registration reply message is an A-11 registration reply message and comprises an indication that the PDSN has data to be sent to the MN.

10. The method claimed in claim 9, wherein:

the indication that the MN is dormant is a Data Ready to Send (DRS) parameter set to a value of 0 (DRS=0) and the indication of the identity of the MN is an International Mobile Station Identification Parameter (IMSI); and

the indication that the PDSN has data to be sent to the MN is a Data Ready to Send (DRS) parameter set to a value of 1 (DRS=1).

11. The method claimed in claim 1 wherein the IP-based Code Division Multiple Access (CDMA) cellular telecommunications network is a CDMA 2000 cellular network.

12. An IP-based Code Division Multiple Access (CDMA) cellular telecommunications system comprising:

a target packet zone to which a dormant Mobile Node (MN) is being handed-off from a source packet zone, the target packet zone comprising:

5 a Base Station Controller having a Packet Control Function (BSC/PCF), the BSC/PCF receiving an origination request message from the dormant MN during the hand-off; and

10 a Packet Data Service Node (PDSN) receiving from the BSC/PCF a registration request for requesting packet data service provision, the registration request comprising an identification of the MN and an indication that the MN is dormant;

15 wherein responsive to the receipt of the registration request message, the PDSN sends a registration reply message to the BSC/PCF for requesting an establishment of a traffic channel between the BSC/PCF and the MN.

13. The IP-based CDMA cellular telecommunications system claimed in claim 12, wherein responsive to the receipt of the registration reply message, the BSC/PCF establishes a traffic channel with the MN.

14. The IP-based CDMA cellular telecommunications system claimed in claim 13, wherein following the establishment of the traffic channel, the BSC/PCF sends a Registration message to the PDSN for reporting the successful establishment of the traffic channel.

15. The IP-based CDMA cellular telecommunications system claimed in claim 14, wherein following the receipt of the Registration message, the PDSN sends to the BSC/PCF Link Control Protocol (LCP) data packets for the negotiation of a PPP connection.

16. The IP-based CDMA cellular telecommunications system claimed in claim 15, wherein the BSC/PCF sends the LCP data packets to the MN.

17. The IP-based CDMA cellular telecommunications system claimed in claim 12, wherein:

the origination request message comprises an indication that the MN is dormant and an indication of an identity of the MN;

the registration request message is an A-11 registration request message and comprises the indication that the MN is dormant and the indication of the identity of the MN; and

the registration reply message is an A-11 registration reply message and comprises an indication that the PDSN has data to be sent to the MN.

18. The IP-based CDMA cellular telecommunications system claimed in claim 17, wherein:

the indication that the MN is dormant is a Data Ready to Send (DRS) parameter set to a value of 0 (DRS=0) and the indication of the identity of the MN is an International Mobile Station Identification Parameter (IMSI); and

the indication that the PDSN has data to be sent to the MN is one of a Data Ready to Send (DRS) parameter set to a value of 1 (DRS=1), and a Data Available Indicator.

19. The IP-based CDMA cellular telecommunications system claimed in claim 12, wherein the IP-based Code Division Multiple Access (CDMA) cellular telecommunications system is a CDMA 2000 cellular network.

09/09/00 09:00:00